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Bull. Natn. Sci. Mus., Tokyo, Ser. A, **15**(4), pp. 223–229, December 22, 1989

Some Stomatopods (Crustacea: Stomatopoda) from Japanese Waters, with Description of a New Species

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(Communicated by Minoru IMAJIMA)

Abstract Eight species of stomatopod crustaceans from Japanese waters are presented in this study, of which five species, including one new species, have never been reported before from Japanese waters. Three species which are assigned to *Faughnia* SERÈNE, 1962, are discussed, and they probably belong to only one species, *F. haani* (HOLTHUIS, 1959).

While studying the crabs collected by the Japanese research vessel "Hakuho Maru" during her cruise to the Indonesian seas in 1985, I came across some stomatopod crustaceans preserved in the Department of Zoology, National Science Museum, Tokyo, under the supervision of Dr. M. TAKEDA. Then, I visited the Zoological Laboratory, Kyushu University, Fukuoka, where Mr. H. MINEI showed me the stomatopods under his care. I realized that some of the specimens of both laboratories belong to the species which so far have never been reported to exist in Japanese waters. Furthermore, one specimen of the genus *Gonodactylus* belonging to the *falcatus* group is never been described and herewith I name it as *Gonodactylus takedai* new species. The presence of *G. falcatus* is reported on several specimens after the review of this group by MANNING (1978 a) who stated that its distribution outside the Red Sea needs to be confirmed. *Pseudosquilla oxyrhyncha* was regarded by HOLTHUIS (1941) and MANNING (1972) as existing in Japanese waters, but MIYAKE (1982) excluded this species from his list which was probably due to KOMAI (1927) reluctant to regard one of his specimens as belonging to this species. *Faughnia* SERÈNE, 1962, which is presently known to host three species, i.e., *haani* (HOLTHUIS, 1959), *profunda* MANNING et MAKAROV, 1978 and *serenei* MOOSA, 1982, was represented by the three forms collected by Dr. K. SAKAI at Tosa Bay and this led me to believe that these three species are probably belong to only one species.

Totally I have recovered five species of the collections as never been reported to exist in Japanese waters (including the new species), they are: *Pseudosquilla oxyrhyncha* BORRADAILE, 1898; *Gonodactylus insularis* MANNING et REAKA, 1982; *G. takedai* sp. nov.; *G. viridis* SERÈNE, 1954; *Heterosquilla mccullochae* (SCHMITT, 1940) and *Harpiosquilla melanoura* MANNING, 1968. The above mentioned species could be added to the list of Japanese Stomatopoda of MIYAKE (1982).

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Family Gonodactylidae

Gonodactylus falcatus (Forsskål, 1775)

Material examined. Tanega-shima I.; 12/6/1975; coll. M. Takeda; 1 ♂ 54.5 mm (NSMT-Cr 9322). Ogasawara (Bonin) Is.; 10/12/1968; coll. M. Imajima; 2 ♂♂ 15.4, 32.9 mm, 4 ♀♀ 9.5–12.4 mm (NSMT-Cr 9318). Miyanohama, Chichi-jima I., Ogasawara Is.; 1/7/1976; coll. M. Takeda; 3 ♀♀ 25.2–32.4 mm (NSMT-Cr 9323).

Remarks. The species has been reported by Manning (1965) and listed by Miyake (1982) as inhabitant of Japanese waters. In his review on the *falcatus* group of *Gonodactylus*, Manning (1978 a) stated that this species is only known with certainty from the Red Sea and its distribution outside the Red Sea remains to be determined. Komai (1927) mentioned the presence of *G. glabrous* from various localities in Japanese waters, but did not mention the presence of *G. falcatus*. It is suspected that Komai's specimens were destroyed during the war, but if they are extant, further study can probably reveals their composition. *Gonodactylus glabrous* can be easily distinguished from *G. falcatus* by the absence of median carinule on the sixth abdominal somite. Miyake (1982) does not mention *G. glabrous* in his list probably due to confusion on the older synonymies.

The larger specimens of the present material show clearly the presence of median carinule on the sixth abdominal somite, while in the smaller specimens (less than 13 mm) this carinule is not clearly seen.

Distribution. Gonodactylus falcatus was formerly known as a widely distributed species in the Indo-Pacific waters, but Manning (1978 a) on his review of the group stated that this species was known with certainty only from the Red Sea. The present record can be regarded as a confirmation on the presence of *G. falcatus* in southern Japanese waters.

Gonodactylus insularis Manning et Reaka, 1982

Material examined. Miyanohama, Chichi-jima I., Ogasawara (Bonin) Is.; 25/7–10/8/1976; coll. M. Takeda; 1 ♀ 29.7 mm, 1 ♂ 23.6 mm (NSMT-Cr 9321).

Remarks. The specimens agree with the description and figure (fig. 1) of Manning and Reaka (1982). The color of the Japanese specimens is faded, and therefore it is impossible to be given here. I would have to agree to identify these specimens with *G. insularis*, although the faded coloration should be taken into consideration.

Distribution. Gonodactylus insularis has been reported from Enewetak Atoll (Manning and Reaka, 1982), and the presence of this species in the Ogasawara Islands, a new record for Japan, shows its northwestward distribution.

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Gonodactylus takedai sp. nov.

(Fig. 1)

Holotype. Miyanohama, Chichi-jima I., Ogasawara (Bonin) Is.; 1/7/1976; coll. M. TAKEDA; 1 ♂ (holotype) 27.2 mm (NSMT-Cr 9332).

Description. Rostral plate about as long as wide, median spine relatively long with tip reaching the base of mesial side of eye peduncle; anterior margin almost straight with acute but rounded anterolateral margins. Ocular scales fused, forming a somewhat trapezoidal single scale with rounded margin, no trace of fusion line can be observed, margin rounded; width approximately one third of rostral plate wide. First five abdominal somites without transverse groove; sixth somite with six carinae which are moderately inflated, lateral and intermediate carinae armed with sharp spine, submedians seem to bear spinule which is broken in the type specimen; median carinule absent. Abdominal width/carapace length index 850. Telson slightly wider than long. Dorsal carinae of telson moderately inflated; median and accessory medians each with spine flanked ventrally with strong excavation. Knob

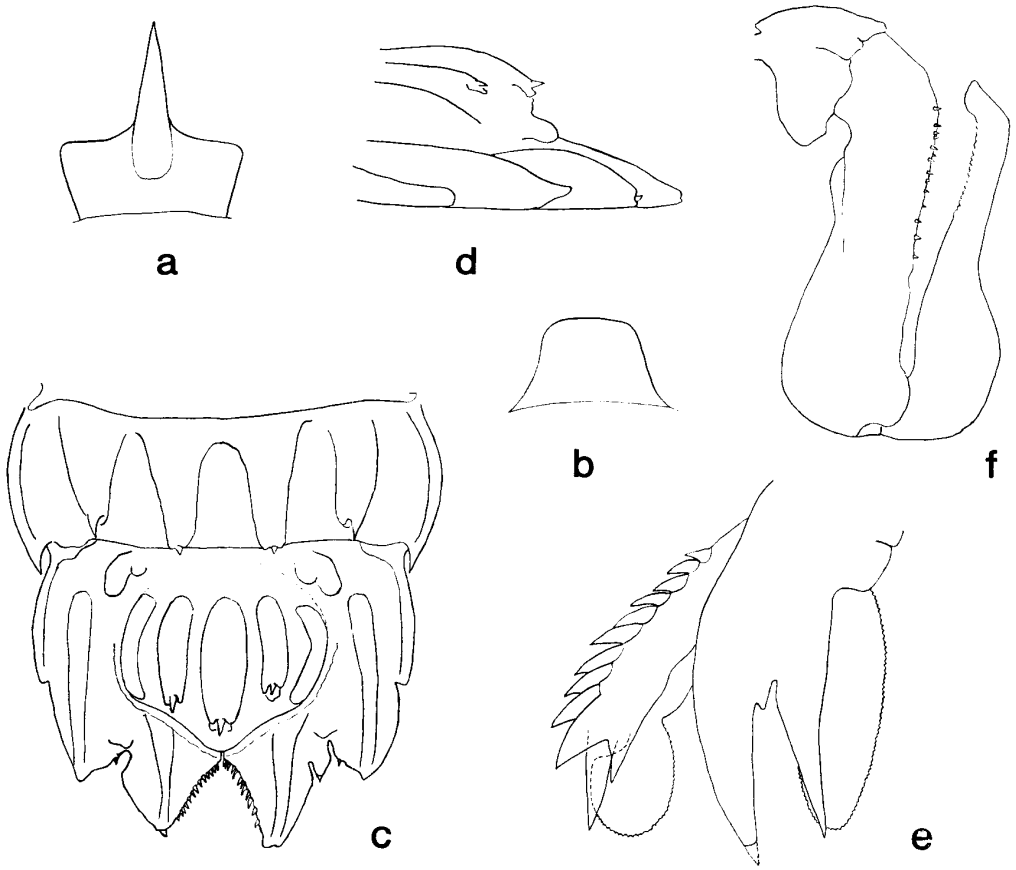

Fig. 1. *Gonodactylus takedai* sp. nov., male holotype, TL 27.2 mm. a, Rostral plate; b, ocular scale; c, sixth abdominal somite and telson (dorsal view); d, telson (lateral view); e, uropods (ventral view, setae omitted); f, raptorial claw.

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with margin entire, not bilobed. Three pairs of marginal teeth present, left submedian and intermediate teeth are not symmetrical with the right side which make them look shorter and wider than the right part; submedians with movable apices which is broken on the right one. Dark spot on anterior surface of telson is not seen. Ventral surface without post-anal carina. Uropodal exopod with 11 graded movable spines on outer margin; basal prologation of uropod with one rounded lobe proximally on inner margin of outer spine.

Color. The preserved material does not exhibit the marked coloration or pigmentation. The general coloration is yellowish-olive green.

Measurements. TL 27.2 mm. Carapace length 5.2 mm. Rostral plate: width 1.8 mm, length 1.8 mm. Fifth abdominal somite width 4.4 mm. Telson: width 3.6 mm, length 2.8 mm.

Remarks. *Gonodactylus takedai* sp. nov. resembles the *falcatus* group which is lacking the median carinule on the sixth abdominal somite. This new species can be easily separated from all the presently known species of the group in having the entire knob on the telson and by having the entirely fused ocular scales.

Etymology. The name *takedai* is dedicated to Dr. M. Takeda, a prominent carcinologist who presently supervises the crustacean collection in the National Science Museum, Tokyo.

Gonodactylus viridis Serène, 1954

Material examined. Kasari, Amami-Oshima I., Ryukyu Is.; 2/8/1965; coll. K. Baba; 1 ♀ 20.6 mm (NSMT-Cr 9325), 1 ♂ 32.1 mm (ZLKU). Gushichan, Okinawa-jima I., Ryukyu Is.: 3/7/1959; coll. H. Minei; 1 ♀ 29.9 mm (ZLKU). Minatogawa, Okinawa-jima I.; 9/3/1960; coll. H. Minei; 1 ♂ 32.0 mm (ZLKU). Itoman, Okinawa-jima I.; 5/1960; coll. H. Minei; 1 ex. (ZLKU). Kometsu, Okinawa-jima I.; 19/2/1962; coll. H. Minei; 2 exs. (ZLKU).

Remarks. This species has never been reported from Japanese waters, although probably the older records of *G. chiragra* may consist this species. *G. viridis* can be easily distinguished from *G. chiragra* in the form of ocular scales which is small in *viridis* and large in *chiragra*.

Distribution. *Gonodactylus viridis* has been reported from Nhatrang, Vietnam (Serène, 1954), Ko Phuket, Thailand (Dingle *et al.*, 1977; Manning, 1978 b), the Philippines (Moosa, 1985). It is the most common species in the intertidal area in Indonesian coral islands. The presence of this species in Japanese waters is a new record for Japan and also showing its northernmost distribution.

Family Pseudosquillidae

Pseudosquilla oxyrhyncha Borradaile, 1898

Material examined. Miyanohama, Chichi-jima I., Ogasawara (Bonin) Is.; 1/7/

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1976; coll. M. TAKEDA; 1 ♂ 36.2 mm (NSMT-Cr 9331).

Remarks. KOMAI (1927) reported two specimens under *Pseudosquilla ornata* of which one was having a rostrum with a delicate acute spine (fig. 2 a, in the text he mentioned as 2b which is a figure of raptorial claw). Although he mentioned the closeness of one of his specimens to *P. oxyrhyncha*, but he was reluctant to name it as *oxyrhyncha*, instead he suspected that *oxyrhyncha* probably should be merged in *P. ornata*. HOLTHUIS (1941) regarded KOMAI's record as belonging to both *P. ornata* and *P. oxyrhyncha*, and MANNING (1972) regarded that one of KOMAI's specimens must be identified as *P. oxyrhyncha*. MIYAKE (1982) in his list does not mention *P. oxyrhyncha* as inhabitant of Japanese waters. Therefore, I would like to confirm by having a specimen, the presence of *P. oxyrhyncha* in Japanese waters.

Distribution. Pseudosquilla oxyrhyncha is widely distributed in the Indo-Pacific region. From Japan it has been recorded from the Ryukyu Islands (as *P. ornata* (part) by KOMAI).

Faughnia haani (HOLTHUIS, 1959)

Material examined. Off Mimase, Tosa Bay; 29/2/1960; coll. K. SAKAI; 1 ♂ 130.5 mm (ZLKU 416). Tosa Bay; 8/4/1965; coll. K. SAKAI; 1 ♂ 140 mm (ZLKU 487). Tosa Bay; 16/1–14/2/1963; coll. K. SAKAI; 2 ♀♀ 110.7, 114.5 mm (ZLKU).

Remarks. The specimens were collected by Dr. K. Sakai from the fishermen in Tosa Bay. The depth and exact location of the catch are unknown. I suspect they came from the same area somewhere off Tosa Bay, southern Japan. They exhibit very striking forms which cover all the three known species of the genus. The large male (TL 140 mm) does not possess spine on the intermediate carinae of the fifth and sixth abdominal somites which is the main distinguishing character of *F. haani*, while the smaller male (TL 130.5 mm) has the armed intermediate carinae of the fifth as well as sixth abdominal somite. This indicates that it belongs to *F. profunda* which is so far known only from east African waters (MANNING & MAKAROV, 1978). Two females (TL 110, 114 mm) have only the intermediate carinae of the fifth somite armed which is the distinguishing character of *F. serenei*. It is seen that the rugose body, with more pronounced pits, is shown by larger male and less pronounced in the smaller male and the females. Other characters such as the anterolateral angle of carapace, the lateral margins of thoracic somites and the carination of the telson seem to be not markedly different. Therefore, I suspect they all belong to one species (i.e., *F. haani*) rather than to three species as presently regarded (MOOSA, 1982). The differences are probably superficial and due to individual variation as has been shown in some species of the *Oratosquilla woodmasoni* group.

Distribution. Faughnia haani has been previously reported from Japanese waters by KOMAI (1927 as *Pseudosquilla empusa*) from Nagasaki and now from Tosa Bay.

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Family Lysiosquillidae

Heterosquilla mccullochae (Schmitt, 1940)

Material examined. Ibaruma, Ishigaki-jima I., Ryukyu Is.; 12–16/3/1984; coll. S. Yanagawa *et al.*; 1 ♀ 64.4 mm (NSMT-Cr 9333).

Remarks. The present specimen agrees with the description and figure of Schmitt (1940) and also with Manning's figure (1974, fig. 2) in most of the detail except in the arrangement of submedian denticles of telson. The Japanese specimen is larger than those of Schmitt's, Manning's, Shanbhogue's (1972), and Maluku specimen (preserved in Jakarta) and therefore exhibits "more matured" arrangement of denticles which is looked more straight arrangement. The characteristic color pattern of this species which is shown in Shanbhogue's plate leads me to conclude that Shanbhogue's specimen also belongs to the same species.

Distribution. Heterosquilla mccullochae has been reported from the Gulf of California, Mexico (Schmitt, 1940); in the western Atlantic from Florida to Puerto Rico (Manning, 1974); Arabian seas (Shanbhogue, 1972), Maluku, Indonesia (Moosa, 1974 as *Acanthosquilla* sp.). This is a new record for Japanese waters.

Family Harpiosquillidae

Harpiosquilla melanoura Manning, 1968

Material examined. Off Tosa-shimizu, Tosa Bay; 24/3/1960; coll. K. Kurohara; 1 ♀ 101.4 mm (ZLKU 419).

Remarks. The specimen agrees with the description and figures of Manning (1968, 1969). The species is characterized by the absence of median carina on the carapace, the absence of submedian carinae on last three thoracic and first five abdominal somites. Other distinguishing character is the entirely black colored uropodal endopod and distal segment of uropodal exopod.

Distribution. Harpiosquilla melanoura has been recorded in Madagascar, the Mergui Archipelago, and New South Wales (Manning, 1969), and its occurrence in Japanese waters shows its wide distribution in the Indo-Pacific region. The present record is new to Japan.

Acknowledgements

I would like to express my thanks to Dr. Masatsune Takeda, senior curator of the National Science Museum, Tokyo, who has given me access to study the collection as well as to use his private library; to Mr. Hisakatsu Minei, assistant of the Zoological Laboratory, Kyushu University. The visit to Japan was made possible by the permit given to me from the Indonesian Government and the fellowship awarded by the Japanese Government through the Japan Society for the Promotion

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of Science. I am deeply indebted to Prof. Takahisa NEMOTO, Director of the Ocean Research Institute, University of Tokyo, as the coordinator of this program.

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